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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/837,902	04/18/2001	Hui Wang	ACMR-001-02US	1040
20872	7590	07/29/2004	EXAMINER	
MORRISON & FOERSTER LLP 425 MARKET STREET SAN FRANCISCO, CA 94105-2482			LEADER, WILLIAM T	
			ART UNIT	PAPER NUMBER

1742

DATE MAILED: 07/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary	Application No.	Applicant(s)	
	09/837,902	WANG, HUI	
	Examiner	Art Unit	
	William T. Leader	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 110-138 is/are pending in the application.
- 4a) Of the above claim(s) 111-115 and 120-138 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 110 and 116-119 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>4-18-01;3-13-03</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Receipt of the papers filed on April 23, 2004, is acknowledged. Applicant has elected species 1, claims 110 and 116-119 without traverse. Claims 111-115 and 120-138 are withdrawn from consideration.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 110 and 116-119 are rejected under 35 U.S.C. 102(b) as being anticipated by Kubo et al (5,326,45).

4. The Kubo et al patent is directed to a process employing electroplating. Copper is deposited onto drum 11 which serves as the substrate. The drum is rotated (column 6, lines 46-50). Electrolyte is flowed directly along the surface of the drum. See figure 1. The substrate may be divided into portions both widthwise and lengthwise. See dimensions "m" and "k" in figure 5. In one interpretation a first portion may be taken as being at one position along the width, and a second portion at a different position along the width. Kubo et al teach obtaining a uniform

thickness by plating the film to a desired thickness on the first portion of the substrate and on the second portion as recited in claim 1. See the abstract. Thus, all steps recited in claim 110 are taught by Kubo et al.

5. Kubo et al disclose that current is supplied to the different portions along the width (dimension "k") of the substrate by a series of sub-anodes 14 which are individually controlled (column 6, lines 19-25). Thus plating current is applied to the first and second portions separately as recited in claim 116. Alternatively, the different portions may be considered to be spaced along the length (dimension "m") of the substrate. Then, plating current is separately supplied to a first portion by main anodes 13 and to the second portion by sub-anodes 14.

6. Claims 117 and 118 include the term "plating current". This term is considered to refer to electric current which causes electroplating to occur. By causing electroplating to occur, the application of a "plating current" clearly prevents deplating. Claim 117 requires the application of plating current to the first portion after the film reaches the desired thickness on the first portion while applying plating current to the second portion. Kubo et al teaches that the main anodes 13 produce about 90-98% of the total thickness of the foil (column 8, lines 23-24). The substrate opposed by the last section of main anodes 13 is considered to be the first portion. As this portion is rotated past the end of the main anode, the desired thickness of 90-98% is obtained. This first portion then rotates toward sub-

anodes 14 where plating current is applied by the sub-anodes. At the same time, a new part of the substrate, which may be considered a second portion, is rotated into opposition with the main anodes, and plating current is applied to this second portion. All limitations of claim 117 are taught by Kubo et al. Kubo et al likewise meets the limitations of claim 118.


7. Claim 119 further recites moving the first portion of the substrate out of the electrolyte while applying plating current to the second portion of the substrate. As shown in figure 5 of Kubo et al, the drum carrying the first portion (as taken in paragraph 6 above) is rotated out of the electrolyte while current is still being applied to the second portion of the substrate.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The Luce et al patent (4,898,647) discloses a process in which electroplating current is separately applied to first and second portions of a rotating substrate while electrolyte is flowed onto the surface of the substrate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William T. Leader whose telephone number is 571-272-1245. The examiner can normally be reached on Mondays-Thursdays and alternate Fridays, 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


William Leader
July 21, 2004


ROY KING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700